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RS-INT
RESEARCH PROGRAMS
Ponderosa Pine Production Study
(Field Season Reports)

1953 FIELD SEASON - SUMMARY OF
FIELD WORK IN THE INSTALLATION OF THE PONDEROSA PINE
PRODUCTION STUDY ON THE BOISE BASIN EXPERIMENTAL FOREST

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I. Field Station Reopening

Reopening of the Idaho City Field Station began April 23 and required much of the last week of April and the first week of May, with interruptions to attend a meeting in Boise re the sale of timber on the Experimental Forest and a day or so of work clearing fallen trees from roads in the Experimental Forest (with Asst. Ranger Trestrail's help) in preparation for an S.A.F. chapter meeting and field trip.

II. Preliminary work

A. Witness trees

After J. D. Curtis' arrival on May 6, one of the first field jobs undertaken was the blazing, scribing, and locating by bearings and distances, one or more witness trees for each compartment boundary stake near Bannock and West Bannock Creeks. This work, done by Curtis and Wilson, was a precautionary measure to allow relocation of stakes in case any were torn out or covered in subsequent road construction or skidding.

B. Other

Other preliminary work toward the experiment during May was confined to getting field equipment and vehicles into shape. An

extended rainy period prevented all but occasional field jobs, due to the condition of the roads.

III. Installation of Sampling Hubs

A. First replicate hubs

About 20 hubs remained to be installed out of the 223 total for the first replicate (see 1952 Field Season Report). The installation of these was attended to by Wilson and LeDosquet (soon after he reported for work as summer assistant on June 4)

B. Alternate hubs-first replicate

After the flagging of spur roads (described below) it was found, not unexpectedly, that several hubs in each compartment would be intersected by these roads. Since this would further complicate the future analysis of hub data, it was decided that an alternate hub would be taken for each such original hub. These were given the same hub number as the original but with the letter "A" added, as H6A for the alternate to Hub 6. These alternates were taken the shortest distance from the original hub that would allow all arms to clear the right-of-way by 50 links (this amount of clearance was not possible in some cases). 28 alternate hubs were necessary for the first replicate compartments. Wilson and all three field assistants (R. Tiedemann and F. March reported June 15) worked on these at various times and received assistance as well from Ralph Holmgren.

Note: In future retallies of hubs, the possibility of using the diameter growth data trees ("regression" trees) at the original hubs

should not be overlooked. In most cases these were undisturbed by road construction.

C. Hubs--Second replicate compartments

The installation of hubs in compartments scheduled for 1954 legging was carried on by Wilson and all three field assistants working as two 2-man crews. Several factors combined to reduce the time available for the installation of these hubs--(1) the installation of alternate hubs described above, (2) the unexpectedly large amount of time required for spur road layout and rechecking and (3) the early departure of two summer assistants (LeDosquet to return to his regular work as school principal and Tiedemann to enter the Army).

As a result, only 74 of the 196 second replicate hubs were installed, leaving 122 to do in the 1954 field season. These are distributed as follows:

<u>Compt.</u>	<u>Hubs to be installed (number)</u>
1	28
11A	11
17	26
20	34
24A	<u>23</u>
	122

IV. 100% Cruise--Second replicate compartments

The cruising of the remaining areas of the second replicate began June 18 with Wilson and three field assistants working as two 2-man crews. The 321 acres which remained to be cruised (parts had already been cruised --see 1951 Field Season Report) were completed by July 16. The cruising procedure was the same as that outlined in the Work Plan and the 1952

Field Season Report with the only change that of recording only dead trees (snags) that were ^{at least} 10 feet tall rather than recording all sawsize dead trees.

V. Spur Logging Roads

A. Road layout

Beginning in late June, considerable time was spent by Wilson and Greenway (Forester-MacGregor Logging Co.) in flagging out spur roads for the logging of the study area, with assistance furnished part time by Youngblood (Forester-Boise-Payette Lumber Co.). A number of return trips were necessary to relocate portions of these spurs to comply as closely as possible to the objectives set up, which included:

1. Construction of the least amount of road which would effectively serve all compartments. This necessitated planning and flagging out all spur roads for all compartments of the study since some contiguous compartments could be served by one entrance road and the construction of an independent system for each compartment could be avoided.
2. Keeping roads sufficiently far enough up the sides of drainages that a ten-foot strip of undisturbed vegetation would be maintained between the lower edge of the overspill and the drainage bottom.
3. Keeping road grades to the minimum allowed by topography, rock outcrops, marked timber distribution (the marking maps --see 1952 Field Season Report--were found very useful in

this respect) and the requirements of Item 2 above. Contour roads were considered but with the study containing separated compartments or groups of compartments, such roads would have involved considerable "between-compartments" or deadhead road. Special efforts were made to keep road grades below 8% as far as possible. Where steeper grades were necessary to avoid draw bottoms, these were kept short (less than 100 feet for the most part) and were located between longer stretches of gentler grade.

Following the initial layout of roads, further inspections and, in some cases, alterations, were made of all spurs by Packer (Forest Influences) and Wilson for further assurance that all watershed considerations, particularly those precautions mentioned above, were being met.

The original estimates placed the total mileage of spur roads for all compartments at about 8 miles. With the alterations that were made, the present estimate of total mileage is 7.2. Of this, 4.8 miles were constructed in 1953 and were completed ^{by} November 2.

B. Right-of-way timber

If it had been possible to install all permanent roads prior to the start of logging operations, the area of such roads could have been computed for each condition class in which they were located, subtracted from the area of the condition class, and the reserve volume per acre (and consequently the cut volume) then be based on the remainder, which would be the actual growing stock area.

Since road construction proceeded along with cutting, there was no opportunity for making instrument surveys of the roads, calculating areas and adjusting the marking accordingly. Consequently the procedure followed in the already-marked first replicate compartments was to mark the trees within rights-of-ways, calculate their volume and lift the marks from sufficient suitable trees elsewhere in the condition class area affected to compensate for their volume, i.e., retain the same reserve volume as originally planned. This procedure does not eliminate the possibility of later subtracting road areas from the condition class areas and readjusting the reserve volumes to the actual growing stock area.

In second replicate compartments the procedure was simply that of marking and recording right-of-way trees to furnish data for later use in computing the cut volumes for these compartments.

For all first replicate compartments, and those of the second replicate in which roads were constructed in 1953, complete rechecks were made after roads were constructed to record any trees whose removal had not been anticipated in the first marking of right-of-way trees. In some cases further revisions in marking were made to compensate for such trees.

Right-of-way marking, marking revisions, and rechecking was done by Wilson before and during logging operations with assistance furnished at various times by March, Swanson, and Haupt.

Note: Considering all spur roads as 12 feet wide, the average area in spur roads (not including Bannock, West Bannock, and the Middle Road) per compartment is about 0.5 acres, almost all of which is in condition classes 3 and 2.

VI. Logging Operation, Slash Disposal Reseeding

The logging of first replicate compartments by the MacGregor Logging Company (contractors to Boise-Payette Lumber Co.) began about September 15 under the terms of the Reg. S-25 Administrative Use Contract between the Boise National Forest and the Boise-Payette Lumber Company. Administration was delegated to Carl Swanson, Assistant Ranger (Lowman District), who was detailed to the Experimental Forest sale. Representatives of the operator were Gordon Greenway, forester-accountant for the MacGregor Logging Co., and Glenn Youngblood, forester for the Boise-Payette Lumber Co.

Timber cutting began with Cts. 9 and 11B which were scheduled for small cat skidding (the original plan for using horses in conjunction with small cats had been abandoned) because it was expected that small cat skidding would proceed slower than large cat skidding and so would have to start earlier. All timber felling was completed by November 16.

Special booklets, prepared by Curtis, were issued to all fallers and cat operators as instructions on the precautions to be observed in felling and skidding, especially in regard to residual reproduction, poles, and sawtrees.

Under the contract terms, Greenway collected cost data on all phases of the seasons operations--felling, skidding, and loading--and was assisted by Youngblood, particularly in the collection of skidding cost data.

The season's operation closed January 16, 1954 after removing 2,402,430 board feet (net scale) from the Experimental Forest.

Because of frozen roadbeds the type of cross-ditches specified in the contract (dug one foot into the roadbed) could not be constructed with the equipment available. Consequently the operator was allowed to construct dikes of material borrowed from roadsides, taking care not to undermine trees or cut banks. This is definitely understood by all concerned to be strictly a temporary measure to be remedied in 1954 by the construction of cross-ditches meeting contract specifications.

Slash disposal and reseeding of roads and skid trails (with grasses) proceeded under Cecil Palmer (Dispatcher, D-3) and R. Trestail (Ass't. Ranger, D-3) who alternated as crew foremen until halted by weather conditions in late November. Compartments completed are 9, 11B, and 3B. Copies of the special instructions for slash disposal and reseeding are on file in the P.P. Prod. Study files at BRC and in Ogden.

VII. Other Work Related to the P.P. Prod. Study

A. Check scale trees--selection and marking

Since a tree measurement book for each compartment of the first replicate had been made up in the course of marking in the fall of 1952, it was possible to obtain an unbiased sample of the marked trees by randomization for tree numbers in these books. Random selection of check scale trees was done in the office by Curtis and Marsh and was designed to afford a 12% (approximately) sample of each species (pine and fir) in each compartment. Field location, blazing and numbering of these trees was done prior to logging by Marsh, using the flow charts for paper tag locations and preparing a separate map showing actual check scale tree locations for the later use of the check scaler.

During logging these trees were check-scaled by Swanson (with occasional help from Wilson) and, in addition, a special check-scale was made in four of the first replicate compartments (9, 28, 7, and 4B). The special check scale followed a method of selection often used on the Boise National Forest and was made to afford a comparison of the two methods of selection. The method used by Swanson consisted of crossing and recrossing a compartment taking every fifth felled tree as a check scale tree until approximately 5% of the marked trees had been scaled. Care was exercised to get sample trees from ridges as well as draws.

B. Felling and skidding damage data for sawtrees

While it is the writer's opinion that all of the operator's personnel cooperated excellently in following the felling and skidding instructions previously mentioned, it could be reasonably expected that some reserve sawtrees would be so severely damaged that their early mortality would be practically certain. Common sense indicates that such trees should be marked for cutting and removed from the area along with the rest of the cut. An opportunity was also seen to obtain better data on such trees than the sampling hubs could afford when later retallies would be made.

Accordingly, rather than depend upon finding such trees after felling (and run the risk of having some of them left standing to contribute to later mortality), all fallers and cat operators were urged to report instances of such damage, as soon as possible after it occurred, to Greenway, Swanson, or Wilson and to turn in the paper tags of such trees, if available. In addition, Swanson and

Wilson made special inspections to detect and mark for cutting any severely damaged reserve trees which the loggers had overlooked.

Good cooperation by the loggers plus frequent checking made it seldom necessary to recall a cutter to fell such trees. Although the decision to cut or retain damaged reserve sawtrees was made independently for each tree, in general trees which had lost half or more of their crown by breakage or stripping were marked for cutting.

Records of these trees were made on a form inserted in the back of each compartment tree measurement book. These data afford means for analyzing sawtree damage (sufficient to warrant felling) by marking methods and intensities of cut and are intended to supplement the data obtained in hub retallies.

Note: Of the 1941 trees cut in 1953 logging, 48 (2.5%) were reserve sawtrees damaged sufficiently to warrant removal. Volume-wise, the percentage would be lower.

C. Flagging Spur Road Cross-ditches

The assistance of Forest Influences personnel was enlisted in deciding on the spacing and types of cross-ditches to be used on spur roads after the completion of hauling operations. The general guides for spacing set up by Packer were as follows:

Grade (%)	0-5	5-10	10-15	Over 15
Spacing (feet)	100	75	50	25

It was also specified that ditches should be cut 12"-16" into the roadbed to provide a face of compacted soil on the downhill side and the material from the ditch should be formed into a ridge or dike below the ditch in such a way that a pickup or similar vehicle could pass over it.

For the guidance of the cat operator the location of each ditch was flagged (by Packer, Haupt, and Wilson) with red cloth strips. "Super-ditches" were specified at certain road forks; these were indicated by double flags.

When the operator indicated that he was ready to begin ditching, Packer, Swanson, and Wilson accompanied the cat operator while he constructed several ditches to insure his understanding the desired construction and the flagging system.

Unfortunately the roadbeds soon froze too tightly for cat or road grader construction of ditches as specified. As a temporary measure, the operator was permitted to build dikes of borrowed material, taking care to avoid undermining trees or cut banks. These dikes were built rather high to allow for settling since the borrowed material contained some snow. The operator understands that this was allowed only as a temporary measure and that specified ditches must be built in place of the dikes before the spur roads will be considered as being properly "put to bed."

Several inspections of the "diking" were made by Swanson and Wilson while it was in progress and a final check made after completion of the season's operation.

D. Ground Photography, 1st Rep. Compartments

Ground photography of pertinent features of the virgin stand structure and composition in 1st Rep. compartments was taken by Curtis using both color and black-and-white (Aerial photographs of the Experimental Forest, to show prelogging conditions, had been taken the previous field season by Hartnett, Millard, and Wilson from the smokejumper plane).

Locations for ground photographs were marked by wooden stakes so that post-logging photographs can be taken from the same spots. These wooden stakes will later be replaced by stamped angle-iron stakes for permanence. Map locations of these points were also noted.

VIII. Other Experimental Work

A. Air-layering Experiment

A test of the possibilities of promoting rooting of ponderosa pine and Douglas-fir branchlets by means of hormones and plastic wrappers was made at the request of the Washington office. The experiment, designed by Wilson and Curtis, included the use of ordinary plastic film, impregnated plastic ("Air-wrap") and root-promoting hormone powder. First applications were made in June by Curtis, Marsh, and Wilson. Two later applications were made by Marsh. Final checking and reporting of results (practically nil) was done by Curtis.

B. Assistance with Forest Influences Division Sediment Dams

Assistance was furnished Packer and Haupt in transporting planks and posts to the sites of the various sediment basins, due for 1953 construction, by Wilson and all three summer assistants (plus Holmgren). In addition assistance was furnished by LeDosquet to Haupt in the actual construction of some of these. After construction, Wilson gave several days to the work of shooting levels and setting bench marks for a number of the dams.

C. Remeasurement of Cottonwood Thinning Plots

Although previous remeasurements of the Cottonwood Creek Thinning Plots had been at 10-year intervals and the last remeasurement made in 1948, it was decided to make a 5-year tally of the plots. This retally was made in October by Curtis and Wilson.

IX. Other Field Season Activities

1. Society of Am. Foresters Chapter Meeting

A meeting of the Idaho Chapter of the Int. Section, S.A.F. was held at Idaho City on May 9 and included a field trip to Pine Creek and the Experimental Forest where some phases of the experiment in ponderosa pine were explained by Curtis and Wilson. Preparatory work for this meeting included preparing charts and data as well as road-clearing (assisted by R. Trestrail, Asst. Ranger).

2. Douglas-fir Classification School plans

Plans were made to hold a Douglas-fir classification school on the Experimental Forest on May 26, based on Wilson's Journal of Forestry (Dec. 1952) paper. This school was postponed indefinitely because of rainy weather and poor roads. Preparatory work done by Curtis and Wilson included the selecting and tagging (paper tags) of a number of trees on the forest for demonstration of the tree classification.

3. Boise Junior College Preforestry Students

At the request of Mr. McCann, instructor at B.J.C., a classroom talk on the design and purpose of the P.P. Production was given October 12 to the preforestry students by Wilson. Probably the

main accomplishment was showing that forestry, particularly forest research, involves much more than the "hunt, fish, camp" that used to appear in the ads.

Later a group of these students visited the forest and were shown various phases of the operation by Packer, Haupt, Swanson, Wilson, and Cole (entomologist).

4. Insect Survey of Experimental Forest.

In June, under the direction of Leslie Orr, B.E.P.Q., a crew of entomologists made a prelogging survey of insect conditions in the compartments of the P.P. study. Sample trees were also selected for future rechecking in each compartment from among those taken for diameter growth data at the hubs (these already bore aluminum paint numbers and were trees likely to be retained for some time). As checks outside the compartment boundaries a number of trees were selected and numbered with yellow paint.

One of the entomologists (Walt Cole) furnished the writer with a list of trees noted as having died or been attacked by insects since the previous season's marking. This list was used as an aid in making the refinements in marking mentioned previously.

5. Withdrawal Areas

In connection with the withdrawal of experimental areas from mineral entry, the writer conducted Mr. Quin Blackburn, mineral examiner, B.L.M., on a 2-day tour of the localities of the Carpenter Creek MC Plots, the Experimental Forest, and Pine Creek MC Plots, the Field Station Headquarters Area, and the Cottonwood Creek Plots.

X. Station closing

Some steps toward closing the buildings at the Field Station were taken after Curtis' departure in October but the North Dwelling and Office were kept heated through November for the use of Swanson and Wilson on inspection visits to the forest. Because the writer was called east by serious illness in the family, Packer attended to the more urgent items (such as shutting off water, locking buildings, etc.). After returning, Wilson was assisted by Swanson and King (Jr. Forester) in final shuttering of buildings on December 18.